

IWASAKI ET AL. -- 10/626,837  
Client/Matter: 008312-0305236

REMARKS

Claims 1, 2, 6, 7, 11 and 14-16 are pending in this application. By this amendment, claims 1, 11 and 18 are amended, claims 3-5, 8-10, 12 and 13 are cancelled and claims 19-26 are added. No new matter is added. Support for the amendments to the claims may be found in original claims 3-5 and 10 and in the specification on page 5, line 18 through page 6, line 26 and page 8, line 10-16. Reconsideration in view of the above-identified amendments and the following remarks is respectfully requested.

Claim 3 was objected to because of an informality because "the protective layer" should be "a protective layer." Claim 3 has been cancelled and the subject matter incorporated into amended claim 1. Proper antecedent basis is provided in claim 1 for "a protective layer." Reconsideration and withdrawal of the objection are respectfully requested.

Claims 1-18 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite because of the language "in a larger amount." In response, the language has been removed from claim 1. Accordingly, the grounds for the rejection are now moot. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-5, 8, 10-14, 17 and 18 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-15 of co-pending Application No. 10/228,952 to Sakawaki et al. ("Sakawaki"). This rejection is respectfully traversed.

Amended claim 1 is directed to a perpendicular recording medium. The perpendicular recording medium includes a nonmagnetic substrate. A first perpendicular magnetic recording layer is formed on the nonmagnetic substrate. The first perpendicular magnetic recording layer has an easy axis of magnetization in a vertical direction. The first perpendicular magnetic recording layer contains cobalt, oxygen and at least one of platinum and chromium. A second perpendicular magnetic recording layer is formed on the first perpendicular magnetic recording layer. The second perpendicular magnetic recording layer has an easy axis of magnetization in the vertical direction. The perpendicular magnetic recording layer mainly contains a crystalline alloy, wherein the crystalline alloy contains cobalt, chromium, platinum and at least one rare earth element selected from the group consisting of yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, thulium, ytterbium and lutetium. The

IWASAKI ET AL. - 10/626,837  
Client/Matter: 008312-0305236

perpendicular magnetic recording medium further includes one of a lubricating layer and a protective layer.

The claims of Sakawaki are directed to a magnetic recording medium comprising, in order, a non magnetic substrate, an orientation regulating layer for regulating the crystal orientation of a layer provided directly thereon, a perpendicular magnetic layer in which easy magnetization axes are oriented generally perpendicular to the substrate, and a protective layer. The magnetic recording medium may have a plurality of magnetic layers. The perpendicular magnetic layer of Sakawaki is formed from a material containing Co as a primary component and at least Cr in an amount of 18 to 28 atomic %, Pt in an amount of 10 to 20 atomic %, and Nd in an amount of 0.5 to 8 atomic %. The perpendicular magnetic layer may further contain at least one element selected from the group consisting of B, Ta, and Cu, in which the total amount of these elements is 8 at % or less. The perpendicular magnetic layer has a ratio of residual magnetization (Mr) in a direction perpendicular to the substrate to saturation magnetization (Ms) in a direction perpendicular to the substrate that is at least 0.85, and an activation magnetic moment represented by the product of activation volume and saturation magnetic moment is  $0.3 \times 10^{-15}$  emu to  $0.8 \times 10^{-15}$  emu.

The claims of Sakawaki further disclose that a soft magnetic undercoat layer formed from a soft magnetic material is provided between the non magnetic substrate and the orientation regulating layer. The soft magnetic layer is oxidized or nitridized.

Furthermore, the claims of Sakawaki disclose a hard magnetic layer in which magnetic anisotropy is generally in a longitudinal direction is provided between the non magnetic substrate and the soft magnetic undercoat layer. The hard magnetic layer is formed from a material containing a CoSm alloy or a CoCrPtX<sub>2</sub> alloy, wherein X<sub>2</sub> is at least one element selected from the group consisting of Pt, Ta, Zr, Nb, Cu, Re, Ni, Mn, Ge, Si, O, N, and B, has a coercive force of at least 500 Oe, and has a magnetization direction along a radial direction of the substrate.

Applicants respectfully submit that the subject matter of claims 1, 2, 11, 14, 17 and 18 is not obvious over the claims 1-15 of Sakawaki. The claims of Sakawaki do not disclose, teach or suggest a first perpendicular magnetic recording layer having an axis of magnetization in a vertical direction with a specified composition and a second perpendicular magnetic recording layer formed on the first perpendicular magnetic recording layer having an easy axis of magnetization in the vertical direction with a specified composition that differs from the first perpendicular magnetic recording layer. These features are present in

IWASAKI ET AL. -- 10/626,837  
Client/Matter: 008312-0305236

claims 1, 2, 11, 14, 17 and 18 in the present application. Sakawaki does not disclose a first perpendicular magnetic recording layer containing cobalt, oxygen and at least one of platinum and chromium and a second perpendicular magnetic recording layer containing a crystalline alloy, wherein the crystalline alloy contains cobalt, chromium, platinum and at least one rare earth element selected from the group consisting of yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, thulium, ytterbium and lutetium. These features are present in claims 1, 2, 11, 14, 17 and 18 in the present application. Sakawaki does not disclose the magnetic recording layers having different compositions. While Sakawaki does disclose the use of a material containing a CoSm alloy or a CoCrPtX<sub>2</sub> alloy, wherein X<sub>2</sub> is at least one element selected from the group consisting of Pt, Ta, Zr, Nb, Cu, Re, Ni, Mn, Ge, Si, O, N, and B in connection with the formation of a hard magnetic layer, these compositions differ from the compositions set forth in the claims from the present application. Further the compositions disclosed by Sakawaki are disclosed in connection with a hard layer having a magnetic orientation in the longitudinal orientation not the perpendicular direction.

With regard to claim 2, applicants respectfully submit that the rejection of claim 2 based upon obviousness-type double patenting over Sakawaki is improper and in error. The Office Action relies on the taking of Official Notice to modify the claims of Sakawaki to reject claim 2 of the present application. This is improper. The determination of an obviousness-type double patenting rejection only permits the review of the claims in the relied upon application and/or patent. Although the taking of Official Notice in an obviousness-type is improper, the Examiner has not provided evidence in support of the taking of Official Notice in accordance with MPEP § 2144.03.

Accordingly, the claims of Sakawaki do not render obvious the claimed subject matter. The claims of the present application are patentable over Sakawaki. Reconsideration and withdrawal of the obviousness-type double patenting rejection are respectfully requested.

Claims 1-14, 17 and 18 were rejected under 35 U.S.C. § 102(a) and (e) over Sakawaki and JP 2003-67910 A. These rejections are respectfully traversed.

The disclosure of Sakawaki and Japan 67910, which is the Japanese counterpart of Sakawaki (collectively referred to as "Sakawaki" for purposes of traversing this rejection) do not anticipate the subject matter of claims 1, 2, 6, 7, 11, 14, 17 and 18. Sakawaki does not disclose, teach or suggest a first perpendicular magnetic recording layer having an axis of magnetization in a vertical direction with a specified composition and a second perpendicular

IWASAKI ET AL. -- 10/626,837  
Client/Matter: 008312-0305236

magnetic recording layer formed on the first perpendicular magnetic recording layer having an easy axis of magnetization in the vertical direction with a specified composition that differs from the first perpendicular magnetic recording layer. While Sakawaki does in Paragraph [0095] in the US application disclose that the perpendicular magnetic layer 5 may have a multi-layer structure having a plurality of layers formed from different materials, Sakawaki fails to disclose, teach or suggest the compositions for the claimed first and second perpendicular magnetic recording layer. Instead, Sakawaki discloses that when a multi-layer structure is employed at least one of the layers is a perpendicular magnetic layer. There is no disclosure that when more than one perpendicular magnetic layer is present, the magnetic layers have differing compositions. Accordingly, Sakawaki does not disclose a first perpendicular magnetic recording layer containing cobalt, oxygen and at least one of platinum and chromium and a second perpendicular magnetic recording layer containing a crystalline alloy, wherein the crystalline alloy contains cobalt, chromium, platinum and at least one rare earth element selected from the group consisting of yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, thulium, ytterbium and lutetium, as set forth in independent claims 1 and 18.

As noted above, Sakawaki does disclose the use of a material containing a CoSm alloy or a CoCrPtX<sub>2</sub> alloy, wherein X<sub>2</sub> is at least one element selected from the group consisting of Pt, Ta, Zr, Nb, Cu, Re, Ni, Mn, Ge, Si, O, N, and B. The use of this material is disclosed in connection with the formation of a hard magnetic layer having a longitudinal magnetic orientation, not in a perpendicular magnetic recording layer having an easy axis of magnetization in the vertical direction.

Accordingly, applicants respectfully submit that Sakawaki fails to disclose the subject matter of amended claims 1 and 18. Claims 2, 6, 7, 11 and 14-17 depend from claim 1 and newly added claims 19-36 depend from claim 18 and are in condition for allowance over Sakawaki for at least the same reasons.

Applicants respectfully submit that the claims of the present application are allowable over Sakawaki and JP 2003-67910 A. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 1-10 and 14-18 were rejected under 35 U.S.C. § 102(b) over US Patent No. 5,851,643 to Honda et al. ("Honda"). This rejection is respectfully traversed.

Honda discloses a magnetic recording media having a non-magnetic substrate, a magnetic film having at least two magnetic layers separated by a non-magnetic layer. Honda

03-14-05

11:30 From-PILLSBURY WINTHROP

703-905-2500

T-261 P.012/013 F-133

IWASAKI ET AL. -- 10/626,837

Client/Matter: 008312-0305236

discloses that the stacked magnetic film, which may be formed of magnetic thin films of at least two or more different compositions connected with each other at an interface and stacked, is epitaxially grown on a structure control underlayer. The magnetic thin film has Co as its main component and is formed from materials which include at least one element selected from a group consisting of Cr, Mo, V, Ta, Pt, Si, B, Ir, W, Hf, Nb, Ru, Ti, Ni and rare earth elements. The magnetic thin film crystal lattice constant for each layer varies with composition.

Applicants respectfully submit that Honda does not anticipate the subject matter of amended claims 1 and 18. Honda does not disclose, teach or suggest a first perpendicular magnetic recording layer having an axis of magnetization in a vertical direction with a specified composition and a second perpendicular magnetic recording layer formed on the first perpendicular magnetic recording layer having an easy axis of magnetization in the vertical direction with a specified composition that differs from the first perpendicular magnetic recording layer. While Honda does disclose that a stacked magnetic film may have layers of differing compositions and the layers have differing lattice constants, Honda fails to disclose, teach or suggest the compositions for the claimed first and second perpendicular magnetic recording layer. Honda does not disclose a first perpendicular magnetic recording layer containing cobalt, oxygen and at least one of platinum and chromium and a second perpendicular magnetic recording layer containing a crystalline alloy, wherein the crystalline alloy contains cobalt, chromium, platinum and at least one rare earth element selected from the group consisting of yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, thulium, ytterbium and lutetium, as set forth in independent claims 1 and 18.

Accordingly, applicants respectfully submit that independent claims 1 and 18 are patentable over Honda. Claims 2, 6, 7, 11 and 14-17 depend from claim 1 and newly added claims 19-36 depend from claim 18 and are in condition for allowance over Honda for at least the same reasons. Applicants respectfully submit that the claims of the present application are allowable over Honda. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 11-13 were rejected under 35 U.S.C. § 103(a) over Honda in view of JP 02-103715 A to Nippon Digital. This rejection is respectfully traversed.

The Office Action correctly notes that Honda fails to disclose the percentage of rare earth element. The Office Action relies on Nippon Digital for allegedly teaching this

03-14-05

11:30 From-PILLSBURY WINTHROP

703-905-2500

T-261 P.013/013 F-133

IWASAKI ET AL. -- 10/626,837  
Client/Matter: 008312-0305236

deficiency. Nippon Digital disclose a single perpendicular magnetic recording layer containing CoCr and a rare earth element. Nippon Digital discloses that the layer contains up to 10 wt % of the rare earth element, which includes y, La, Ce, Nd, Pr, Gd, Sm, Tb, Dy, Ho, Er, or Yb. Nippon Digital, however, fails to disclose, teach or suggest any of the deficiencies of Honda, identified above. Since Nippon Digital discloses only a single layer, Nippon Digital does not disclose the claimed first and second perpendicular magnetic recording layers, as set forth in claim 1. Accordingly, the combination of Nippon Digital with Honda fails to render obvious the subject matter of claim 11. Applicants respectfully submit that the claims of the present application are allowable over the combination of Honda and Nippon Digital. Reconsideration and withdrawal of the rejection are respectfully requested.

Applicant respectfully submit that the claims define subject matter that is patentable over the prior art cited of record. It is respectfully submitted that the application is in condition for allowance. Should further issues require resolution prior to allowance, the Examiner is requested to telephone applicant's undersigned attorney at the number below. Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,  
PILLSBURY WINTHROP LLP

  
GLENN T. BARRETT  
Reg. No. 38705  
Tel. No. 703.905.2011  
Fax No. 703.905.2500

Date: March 14, 2005  
P.O. Box 10500  
McLean, VA 22102  
(703) 905-2000